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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/813,624

03/31/2004

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50024-036

3821

7590 01/12/2009
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EXAMINER

GARRETT, DAWN L

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

01/12/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/813,624	Applicant(s) HAMADA ET AL.	
	Examiner Dawn Garrett	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 19-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 19-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office action is responsive to the amendment received October 21, 2008. Claims 4-18 are cancelled. Claims 20 and 21 were amended. Claims 1-3 and 19-24 are pending.
2. The rejection of claims 20 and 21 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement as set forth in the last Office action (mailed July 21, 2008) is withdrawn due to the amendment.
3. The rejection of claims 20 and 21 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention as set forth in the last Office action (mailed July 21, 2008) is withdrawn due to the amendment.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3 and 19-24 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ishihara et al., Journal of Photopolymer Science and Technology, Vol. 15, No. 5, (2002), p. 769-774.

Ishihara teaches organic electroluminescent devices comprising a light emitting layer and hole transporting layer between an ITO anode and a MgAg cathode (see Fig. 1, page 771). Phenylamino compounds for the hole transport layer were synthesized by an Ullmann reaction in the presence of copper powder and were further purified by column chromatography and recrystallization (see section "2.1 Materials" beginning on page 770). Because Ishihara discloses the same method of making the phenylamino compounds as taught by applicant in the instant disclosure, the compounds obtained are considered to inherently have the same characteristics, including copper impurity levels, as set forth by applicant. See product-by-process discussion in MPEP 2113.

With regard to claims 19 and 24, regardless of a method of detecting impurities, the final product in the prior art is considered to meet all product limitations of the claims as required. The apparatus and method for detecting impurities do not effect the composition of the device product. In addition, ICP is a well known analytical method of elemental analysis as evidenced by Power et al. (US 5,756,786).

In the alternative that Ishihara et al. does not *anticipate* the purity levels of the organic compounds of the claims, it would have been obvious to one of ordinary skill in the art at the time of the invention to have purified and to have selected an organic phenylamino compound of a desired purity as one would expect a purer form of a compound to perform a better hole

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transporting function than an impure form of the compound in a device. The experimental modification of this prior art in order to ascertain optimum operating conditions fails to render applicant's claims patentable in the absence of unexpected results. Furthermore, it is obvious to purify a known compound (see MPEP 2144.04).

7. Claims 1-3 and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi (EP 1063869 A1) in view of Turner et al. (US 4,764,625).

Higashi et al. discloses organic electroluminescent devices with an organic compound layer having an impurity concentration of lower than 1000 ppm (see abstract). This impurity concentration encompasses the impurity range required by the present claims. The organic compounds may include phenylamino-containing compounds (see par. 49, 75-77 and 88-95). The electroluminescent devices include light emitting and carrier transporting layers per claim 3 (see par. 12). It would be obvious to one of ordinary skill in the art to use a compound at a purity level that most beneficially affects the operating performance of the device as taught by Higashi et al. to avoid degradation of the devices (see par. 6, par. 67-69). Furthermore, it is obvious to purify a known compound (see MPEP 2144.04). Higashi does not expressly teach the method of an Ullmann reaction, which involves usage of copper-containing materials, to obtain the phenylamino compounds. Secondary reference, Turner et al., teaches it is well established amino compounds may be formed by an Ullmann synthesis reaction using a copper catalyst (see abstract). Since the method for making a tertiary amine using an Ullmann reaction is well known in the art, it would have been obvious to one of ordinary skill in the art to have selected a tertiary amine synthesized by an Ullmann reaction in the Toguchi et al. device, because one would expect the predictable result of a tertiary amine for use as a hole transporting material an

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organic electroluminescent device. Compounds formed by the Ullmann process would be expected to have a similar level of copper impurities as recited in the claims, because applicant does not recite or expressly disclose any specific process of achieving the claimed levels of purity other than to synthesis the phenylamino compounds using an Ullmann reaction.

With regard to claims 19 and 24, regardless of a method of detecting impurities, the final product in the prior art is considered to meet all product limitations of the claims as required. The apparatus and method for detecting impurities do not effect the composition of the device product. In addition, ICP is a well known analytical method of elemental analysis as evidenced by Power et al. (US 5,756,786).

Response to Arguments

8. Applicant's arguments filed October 21, 2008 have been fully considered but they are not persuasive.

Applicant argues with regard to the rejection over Ishihara et al., the claimed copper impurity level of Ishihara et al. is not inherent, because the instant Table 1 shows impurity levels as high as 1500 ppm or greater. The examiner respectfully submits that reliance upon instant Table 1 is insufficient to conclude the impurity levels claimed are not inherent. The examples shown in instant Table 1 do not specifically describe how the copper atom impurity levels were obtained. Accordingly, applicant's argument with regard to Table 1 is not persuasive. A clear comparison between the instant Table 1 examples and the prior art has not been established. Additionally, applicant has not provided clear evidence that the compounds of the prior art (made by the same synthesis process) do not have the required copper atom impurity levels.

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The examiner has provided a reasonable basis to believe that the prior art teaches the required characteristics. Applicant has appeared to argue throughout the prosecution history that the copper impurity levels are due to the Ullmann synthesis process for making the arylamine compounds. All of the claimed compounds, method of making the compounds (Ullmann reaction) and methods of purification of the instant disclosure were known in the prior art at the time of the invention. Burden is shifted to applicant to show evidence that the prior art does not comprise the characteristics and properties as claimed. Recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co.*, 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. *In re Fitzgerald*, 205 USPQ 597, *In re Best*, 195 USPQ 430.

Applicant further argues “Because Ishihara et al. do not disclose the organic compound layer contains copper atoms as impurities in a weight concentration of not lower than 40 ppm and not higher than 500 ppm, as required by claims 1 and 20; and the copper atoms can be detected, and are present in a weight concentration of not higher than 500 ppm, as require by claim 22, Ishihara et al. do not anticipate claims 1, 20, and 22.” In response, applicant’s assertion is unpersuasive to show error in the rejection. As noted above, applicant has not directed the examiner to any persuasive evidence demonstrating that the prior art would not possess the claimed property limitations.

Applicant further argues the prior art does not recognize the impurity level is an important characteristic with regard to luminance efficiency and lifetime. Also, applicant argues

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there is no teaching in the cited prior art of obtaining phenylamino compounds with the claimed range of Cu concentration. The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., method of purification) are not positively recited in the rejected product claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). As noted previously, recitation of a newly disclosed property does not distinguish over a reference disclosure of the article or composition claims. *General Electric v. Jewe Incandescent Lamp Co.*, 67 USPQ 155. *Titanium Metal Corp. v. Banner*, 227 USPQ 773. Applicant bears responsibility for proving that reference composition does not possess the characteristics recited in the claims. *In re Fitzgerald*, 205 USPQ 597, *In re Best*, 195 USPQ 430.

On page 7 of the response, applicant argues "the Examiner can not rely on the theory that it would have been obvious to purify the claimed phenylamino compound within the claimed concentration range." The examiner respectfully disagrees with applicant's argument and asserts that it is obvious to purify a known compound (see MPEP 2144.04). The examiner further notes: Where a claimed improvement on a device or apparatus is no more than "the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for improvement," the claim is unpatentable under 35 U.S.C. 103(a). *Ex Parte*

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Smith, 83 USPQ.2d 1509, 1518-19 (BPAI, 2007) (citing KSR v. Teleflex, 127 S.Ct. 1727, 1740, 82 USPQ2d 1385, 1396 (2007)). Accordingly, applicant claims a combination that only unites old elements with no change in the respective functions of those old elements, and the combination of those elements yields predictable results; absent evidence that the modifications necessary to effect the combination of elements is uniquely challenging or difficult for one of ordinary skill in the art, the claim is unpatentable as obvious under 35 U.S.C. 103(a). Ex Parte Smith, 83 USPQ.2d at 1518-19 (BPAI, 2007) (citing KSR, 127 S.Ct. at 1740, 82 USPQ2d at 1396). The claims are unpatentable as obvious under 35 U.S.C. 103(a) because they are no more than the predictable use of prior art elements according to their established functions resulting in the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for improvement.

On page 8 of applicant's remarks, applicant alleges new and unexpected results. The examiner submits the data shown in instant Table 1 shows expected rather than unexpected results. Instant specification Table 1:

TABLE 1

copper atom content (ppm)	luminous efficiency (cd/A)	luminescent lifetime (hr)
1500	1.9	130
1100	2.0	150
800	2.9	170
500	3.3	350
200	3.9	400
100	4.0	400
80	4.0	415
40	4.1	420

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As the impurity decreases, the luminescent lifetime improves. It is well known in the art that pure materials result in better devices that are not degraded by impurities (see for example previously cited reference Higashi et al., US 7,045,950, col. 1, lines 60-66 and Table 2).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dawn Garrett/
Primary Examiner, Art Unit 1794

January 6, 2009